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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/534,331	03/20/2006	Frank Miller	10191/3699	9783

26646 7590 12/11/2009

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EXAMINER	
GORMAN, DARREN W	

ART UNIT	PAPER NUMBER
3752	

MAIL DATE	DELIVERY MODE
12/11/2009	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/534,331	MILLER ET AL.	
	Examiner	Art Unit	
	Darren W. Gorman	3752	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *03 November 2009*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *14,15,19-22 and 25-27* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *14,15,19 and 25-27* is/are rejected.

7)☒ Claim(s) *20-22* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *03 November 2009* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

Drawings

1. The replacement drawing sheet including "New" Figure 3 was received on November 3, 2009. This drawing sheet, in conjunction with the disclaimer statement added to the specification in the amendment filed therewith, is acceptable.

Double Patenting

2. The claim amendments filed November 3, 2009 effectively overcome the provisional non-statutory obviousness-type double patenting rejection set forth in the office action mailed August 21, 2009.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 14, 15 and 19 are rejected under 35 U.S.C. 102(b) as being anticipated by Tsuji, USPN 3,913,845.

With respect to the atomization tube shown in Figure 4 of the Tsuji patent, the components upstream from the atomization tube are disclosed as being the same as what is shown in Figure 1 (see column 2, lines 22-26). Thus, the device of Figure 4 of Tsuji comprises:

a fuel injector (upstream device which inputs fuel to fuel passage (2) and fuel port (2a)); an atomization tube (4) including at least a first section and a second section, wherein the first section has a wall thickness that is different than that of the second section (upstream end of the tube is shown to have a thinner wall thickness than that of the remaining portions of the tube), and wherein the second section is downstream from the first section, and wherein the second section may be divided arbitrarily into multiple subsections; an air inlet (3a); and at least one metering aperture (2a); wherein the second section includes a plurality of bore holes (6a, 6b, 6c, 6d) at each of a plurality of positions on an outer wall of the atomization tube, along a length (the length being defined from an upstream end to a downstream end of the tube) of the atomization tube. Figure 4 also clearly shows diameters of the bore holes at each position on the outer wall of the atomization tube increasing in a downstream direction along the length of the atomization tube (6c is shown to have a larger diameter than 6d; 6b is shown to have a larger diameter than 6c; and 6a is shown to have a larger diameter than 6b).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 25-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tsuji.

Regarding claim 25, Tsuji shows all of the recitations set forth in claim 14, however Tsuji does not expressly disclose any of the recited processes by which the atomization tube is formed.

It is however noted that the recitations of claim 25 are merely product by process recitations. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or an obvious variant from a product in the prior art, the claim is unpatentable even though the prior product was made by a different process (see MPEP 2113). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to form the atomization tube of Tsuji from at least one of the processes recited in claim 25.

Regarding claims 26 and 27, Tsuji shows all of the recitations set forth in claim 14, however Tsuji does not expressly disclose a specific optimum diameter range of the bore holes, and Tsuji does not expressly disclose an optimum ratio between a diameter and a length of the bore holes, although discovering such optimum ranges would be within the skill of one in the art through routine experimentation and engineering expedience in order to determine optimum or desired effluent spray characteristics from the bore holes. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to determine optimal bore hole diameters and optimal diameter-to-length ratios of the bore holes of Tsuji through routine experimentation and engineering expedience in order to determine optimum or desired effluent spray characteristics from the bore holes, since it has been held where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

Allowable Subject Matter

7. Claims 20-22 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

8. Applicant's arguments, see page 8, lines 9-21 of the “Remarks” section of the response filed November 3 2009 have been fully considered but they are not persuasive. Applicant asserts that the prior art device to Tsuji, specifically that shown in Figure 4, does not disclose or suggest the feature of claim 14, which now recites, “wherein diameters of the bore holes at each position on the outer wall of the atomization tube along the length of the atomization tube increase in a downstream direction”. Applicant supports this assertion by stating, “Figure 4 of Tsuji only shows that major diameters of elliptical cross-sections formed by the intersection of a plane parallel to the major axis (O) of the cylindrical nozzle tip (4) and the nozzle holes (6a-6d) increase along the length of the nozzle tip (4) due to a decrease in the angle of the nozzle hole axes with the major axis (O) along the length of the nozzle tip (4)”. Applicant’s observation of the atomization tube shown by Tsuji in Figure 4 is correct, and in essence, Applicant’s observation actually supports the Examiner’s contention that the claim limitations are anticipated by Tsuji. It is the Examiner’s position that the broadly recited “diameters” are met by the prior art because “a diameter” measured at each bore hole along the length of the atomization tube of Figure 4 of Tsuji, for instance, a diameter at the downstream-most discharge point of each bore

hole, can clearly be seen to increase at each position on the outer wall of the atomization tube in the downstream direction of the tube.

Conclusion

9. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Darren W. Gorman whose telephone number is 571-272-4901. The examiner can normally be reached on M-F 7:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Len Tran can be reached on 571-272-1184. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Darren W Gorman/
Primary Examiner, Art Unit 3752